

YAKEEN NEET 2.0

2026

Basic Maths and Calculus (Mathematical Tools)

Physics

Homework Solution-04

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$$y = \frac{4}{3\sin\theta + 2\cos\theta}$$

find minimum value of 'y'.

$$y_{\min} = \frac{\textcircled{4} \rightarrow \cot\theta}{(3\sin\theta + 2\cos\theta)_{\max}} = \frac{4}{\sqrt{3^2 + 2^2}} = \frac{4}{\sqrt{13}}$$

H/W

$$F = \frac{(\mu mg) \rightarrow \cot\theta}{\sin\theta + \mu\cos\theta}$$

find minimum value of 'F'

$$F_{\min} = \frac{\mu mg}{(\sin\theta + \mu\cos\theta)_{\max}}$$

$$= \frac{\mu mg}{\sqrt{1^2 + \mu^2}}$$

$$F_{\min} = \frac{\mu mg}{\sqrt{1 + \mu^2}}$$

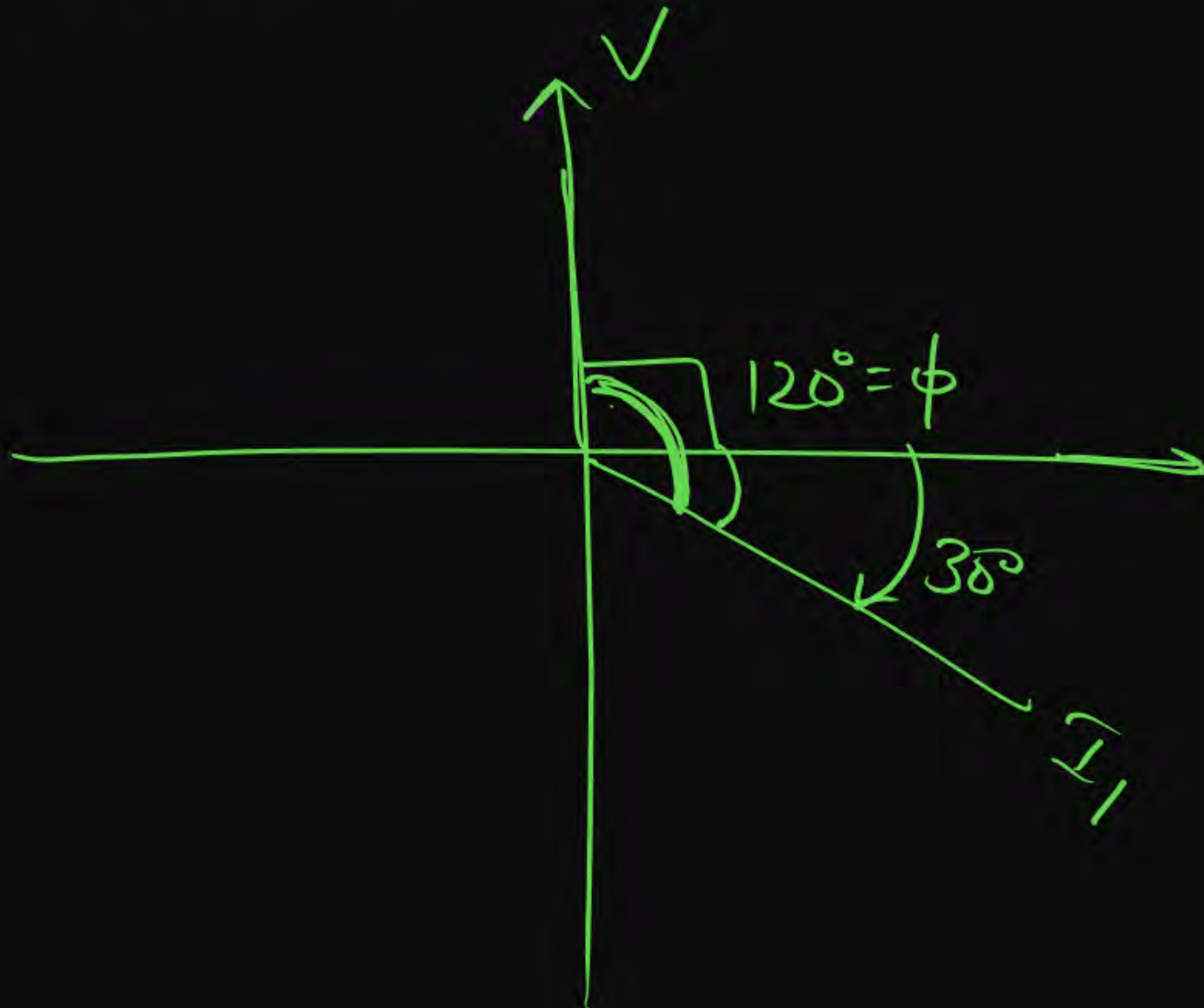
Question



Current in A/C circuit is $I_1 = I_0 \sin(\omega t - 30^\circ)$ and voltage across it $V = V_0 \cos(\omega t)$

Find phase difference?

n/w

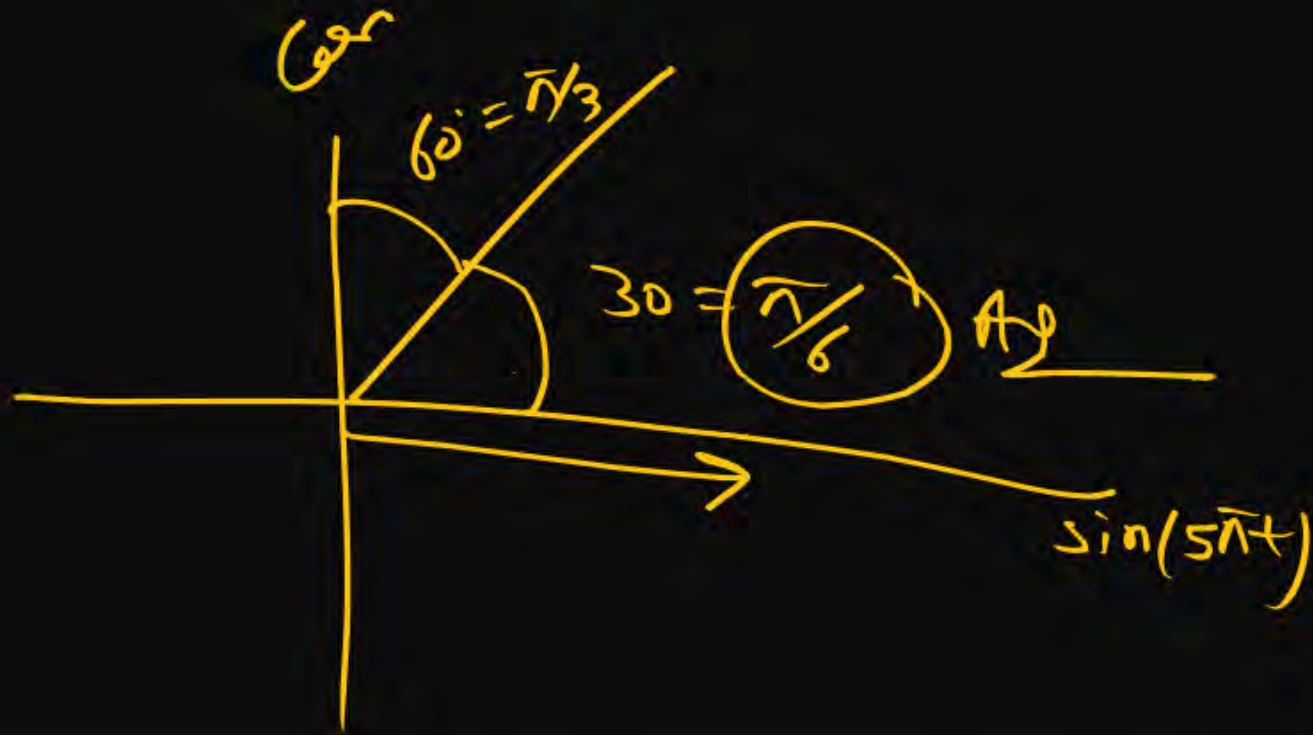


Question

11/10



If $y_1 = 2 \sin(5\pi t)$ and $y_2 = 2 \cos(5\pi t - \pi/3)$, what is the phase difference between the two waveforms?



If $y_1 = 4 \sin (\omega t - \pi/6)$ and $y_2 = 4 \sin (\omega t + \pi/6)$, what is the phase difference between the two waveforms?

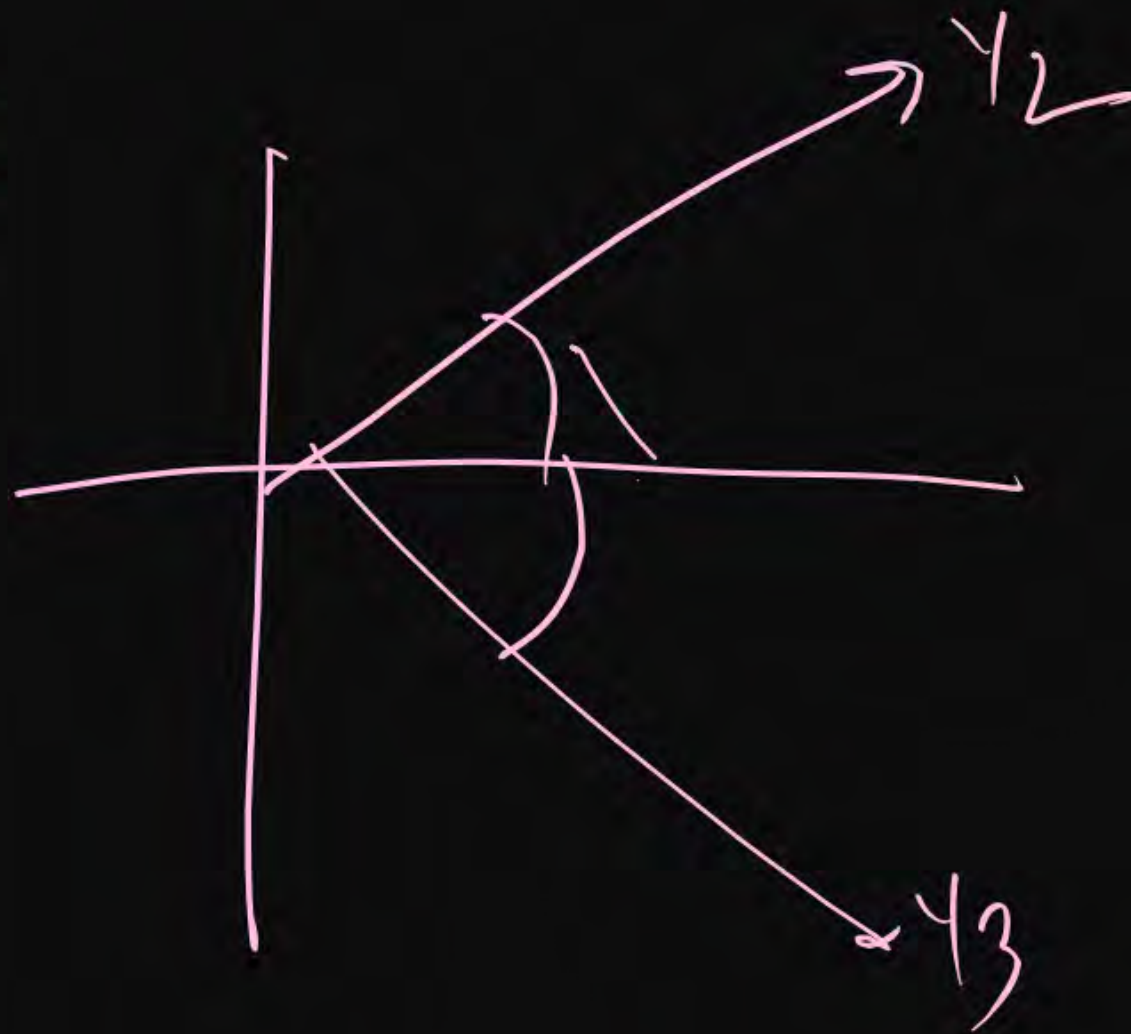
1 $\pi/6$

2 $\pi/3$ ✓

3 $\pi/2$

4 3π

$$\phi = \frac{2\pi}{3}$$



Question

H/W



Two waves are represented by the equations $y_1 = 4 \sin(3t)$ and $y_2 = 4 \sin(3t + \pi/2)$. Determine the phase difference between the two waves.

$\pi/2$

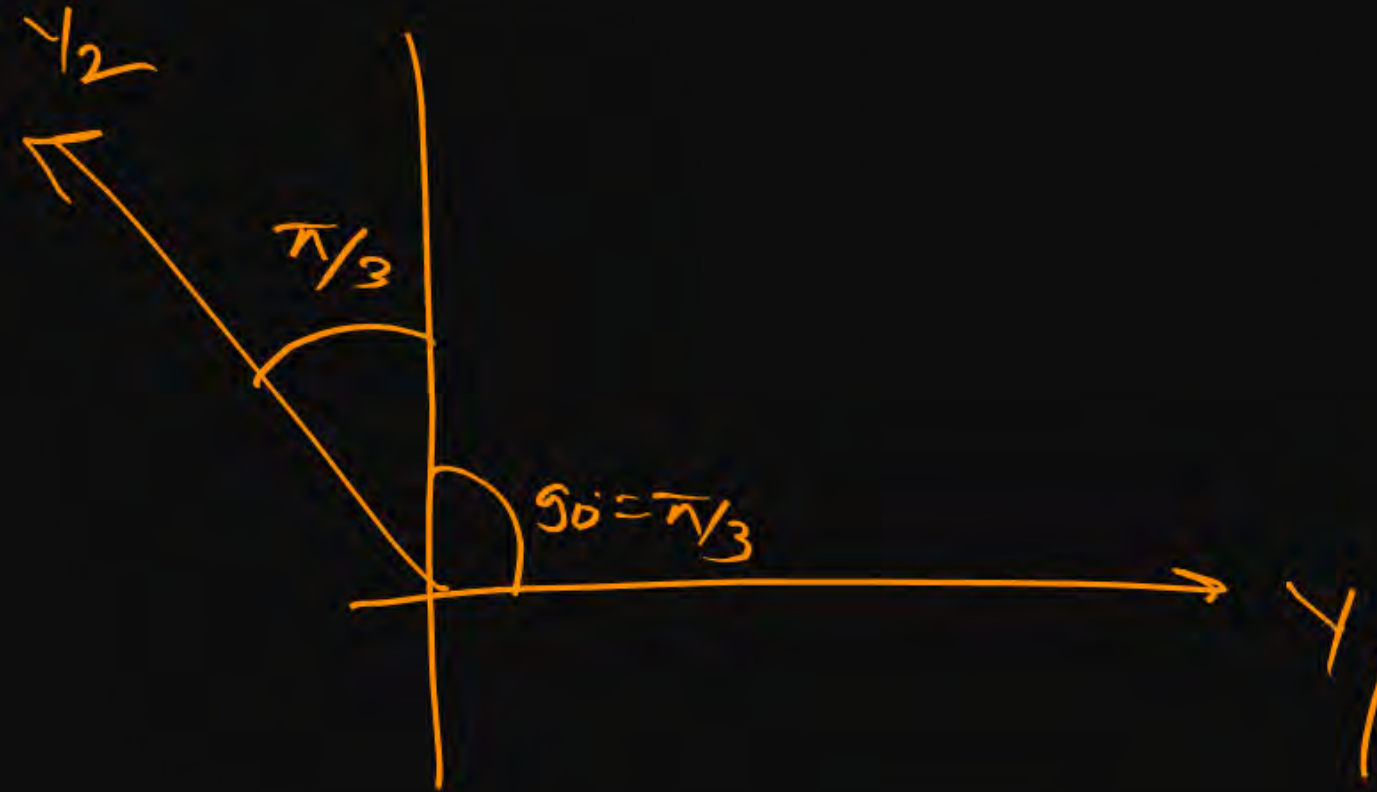


Question

H/W



The equation of two waves are given as $y_1 = 3 \sin (4\pi t)$ and $y_2 = 3 \cos (4\pi t + \pi/3)$. Determine the phase difference between the two waves.



$$\frac{\pi}{6} = 30^\circ$$

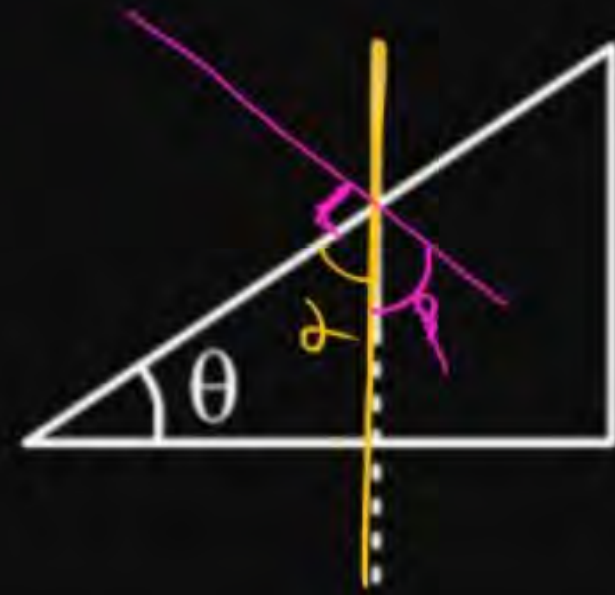
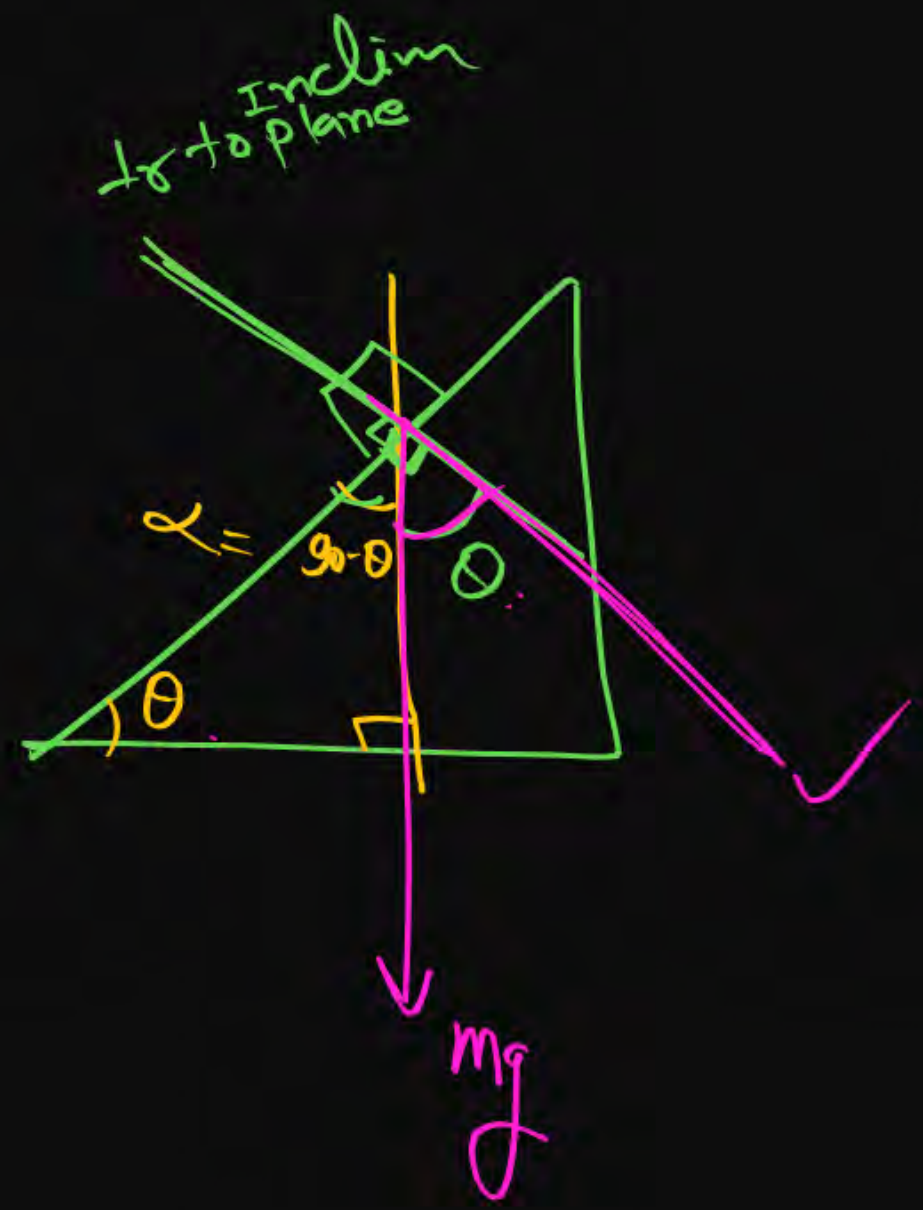
$$\frac{\pi}{3} = 60^\circ$$

$$\underline{\phi = 150^\circ}$$

More Concept of Trigonometry required in physics

H/W

find $\alpha = ?$
 $\beta = ?$



find α , β & $\gamma = ?$



A/P series : — Sequence of number where the difference between any two consecutive number is constant → common diff.

1, 2, 3, 4, 5, 6, 7, 8, 9, ... → A/P series ✓

2, 4, 6, 8, 10, 12, 14, ... → A/P

3, 5, 7, 9, 12, 15, 17

$d = 2$

$$d (\text{common diff}) = n^{\text{th}} - (n-1)^{\text{th}}$$

AP → No A/P series

✓ 1, 3, 5, 7, 9, 11, 13, 15, 17, ... → A/P ✓ $d = 2$

4 6 8

$$d = n^{\text{th}} - (n-1)^{\text{th}}$$

$d = 1$

Question



Which of the following series is not arithmetic progression.

1 2, 8, 15, 15, 27, ~~-----~~

$+6$ $+7$

2 3, 6, 12, 24, ~~-----~~

$+3$ $+3$

3 4, 1, -2, -5, -8, ~~-----~~ (AP) ✓

4 ✓ -5, -3, -1, 1, ~~-----~~ (AP) ✓

$-5 - 3 = -2$
 $-3 - (-1) = -2$
 $-1 - 1 = -2$
 $1 - 3 = -2$
 $-2 - 3 = -5$
 $-5 - 3 = -8$
 $-8 - 3 = -11$

$-1 - (-3) = +2$
 $d = 1 - (-1) = 2$
 $-3 - (-5) = -3 + 5 = +2$

↓
 4, 1, -2, -5, -8, ...

$d = (-5) - (-2)$

$= -5 + 2 = -3$
As

THANK
YOU